REINWARDTIA
Vol 12, Part 5, pp: 435– 440

THREE NEW SPECIES OF DINOCHLOA (POACEAE, BAMBUSOIDEAE) WITH ERECT CULM SHEATH BLADES FROM SULAWESI, INDONESIA

Received December 7, 2008; accepted December 16, 2008

ELIZABETH A. WIDJAJA
Herbarium Bogoriense, Botany Division, Research Centre for Biology – LIPI, Jl. Raya Bogor Jakarta Km 46, Cibinong16911, Indonesia. Email. ewidjaja@indo.net.id

ABSTRACT

WIDJAJA, E.A. 2009. Three new species of *Dinochloa* (*Poaceae, Bambusoideae)* with erect culm sheath blades from Sulawesi, Indonesia. *Reinwardtia* 12(5): 435–440. — *Dinochloa aopaensis, D. morowaliensis,* and *D. petasiensis,* are described as new. They are characterized by their erect culm sheath blades, but are distincted by a combination of characters of the auricle and ligule of the culm sheath, auricle and ligule of the leaf sheath and the pubescence of the leaf sheath. A key to the species of Malesian *Dinochloa* with erect culm sheath blades is presented.

Keywords: *Bambusoideae, Dinochloa,* Indonesia, Malesia, *Poaceae*, Sulawesi.

ABSTRAK

WIDJAJA, E.A. 2009. Tiga jenis baru *Dinochloa (Poaceae, Bambusoideae*) dengan daun pelepah buluh tegak dari Sulawesi, Indonesia. *Reinwardtia* 12(5): 435–440. — *Dinochloa aopaensis, D. morowaliensis,* dan *D. petasiensis,* dipertelakan sebagai jenis baru. Jenis-jenis tersebut dicirikan oleh tegaknya daun pelepah buluh, tetapi dibedakan karena kombinasi ciri kuping dan ligula pelepah buluh, kuping dan ligula daun pelepah buluh dan berbulunya pelepah daun. Kunci semua jenis *Dinochloa* di Malesia dengan daun pelepah buluh yang tegak disajikan.

Kata kunci: *Bambusoideae, Dinochloa,* Indonesia, Malesia, *Poaceae*, Sulawesi.

INTRODUCTION

Dinochloa Buse is open-tufted climbing bamboo which is confined to South East Asia, from Andaman Islands and southern Thailand to Malaysia, Indonesia and the Philippines. Out of the 27 species of the South East Asian bamboo genus *Dinochloa* (S. Dransfield, 1981, 1989, 1992, 1996, 1998, Widjaja, 1997, 2004 and S. Dransfield & Widjaja, 2000, Escobin *et al*., 2005), 8 have erect culm sheath blades. Among the recent collections of *Dinochloa* from Sulawesi, three more species had these, but differ from the known species. Consequently they are described here as new species. The genus has globose or subglobose fleshy fruit with a thin pericarp; the embryo has a large scutellum and a much reduced endosperm, and the plumule and radicle are lateral or sublateral.

Dinochloa aopaensis Widjaja, *spec. nov.*—Fig. 1.

Species distinctissima auricula effusa glabra, ligula integra glabra, lamina erecta infra disperse pubescenti apice acuminato longe contracto margine serrato latere unico solo. — Type: South East Sulawesi, Kunawe District, Pairiala Subdistrict, Rawa Aopa National Park, G. Tiga Cabang, *Elizabeth A. Widjaja EAW 8027* (Holotype: BO, Isotype: K, L).

Young culms green and white waxy, 2 cm diam., internodes 25–35 cm long. *Culm sheath* caducous, glabrous, 5.4–6.0 cm long, margin glabrous, membranous; sheath scar glabrous rarely with scattered pale brown hairs; auricle 1–2 mm tall, spreading not deflexed along the sheath apex, glabrous; ligule *ca.* 1 mm tall, entire; blade erect, broadly ovate, 4.0–5.5 x 0.5–0.9 cm at the base, base cordate, margin overlapping when very young then more or less distant afterward, apex acuminate with a long tapering tip. *Leaves* sheath margin glabrous; auricle small rounded, less than 0.5 mm tall, bristle not seen; ligules *ca.* 1 mm tall, entire; blades 18–29.7 x 1.7–2.5 cm, margin serrate on one side only; along, lower surface scattered hairy. *Pseudospikelets* 2–2.5 mm long, glumes 2, 1– 1.5 mm long, mucronate, lemma 2.2 mm, acute, glabrous, palea 2 mm long, not keeled, acute, glabrous, young anthers 1 mm, yellowish.

Distribution. South East Sulawesi, Kunawe District, Pairiala Subdistrict, Rawa Aopa National Park, G. Tiga Cabang.

Ecology. Secondary forest, *ca.* 400 m asl.

Notes. This species is distinguished from *D. cordata* S. Dransf. and *D. truncata* Widjaja by the spreading culm sheath auricles and the unilaterally serrate leaf margins. Only known from the type.

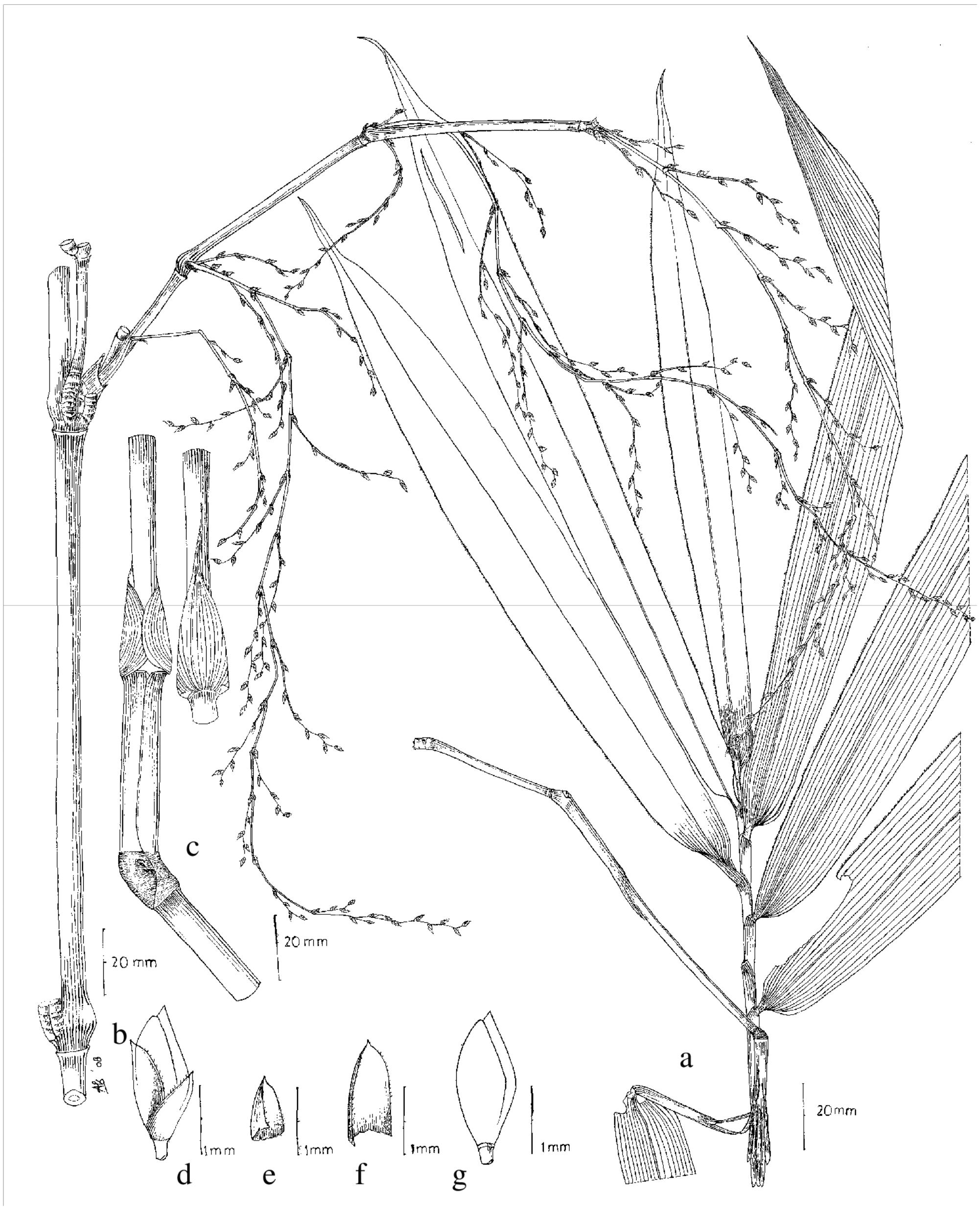

Fig. 1. *Dinochloa aopaensis* Widjaja. (a. Leaf, b. Infloresсense, c. Culm sheath, d. Pseudospikelet, e. Glume, f. Glume 2, g. Lemma and Palea. Drawn from *EAW 8027*).

Dinochloa morowaliensis Widjaja, *spec. nov.*— Fig. 2.

Dinochloa barbata similissima vaginae culmaris auricula deflexa setis multis, sed ligula integra lamina erecta differt. — Type: Central Sulawesi, Morowali District, Petasia Subdistrict, Bungin Timbe Village, about 2—5 km North of Kolonodale, *Elizabeth A. Widjaja EAW 7643* (Holotype: BO, Isotype: L, K)

Young culms green and white waxy, 2 cm diam., internodes 20–30 cm long. *Culm sheath* caducous, glabrous; sheaths 7.0–8.5 cm long, margin with pale brown hairs especially when young; auricles 3 mm tall, curved outward at the edge and deflexed along the sheath apex to the blade base, with many bristles up to 11 mm long; ligule 1 mm tall, entire; blades erect, broadly ovate, 7.0–7.9 x 0.8–1.2 cm wide at the base, base cordate, apex acuminate with a long tapering tip, slightly swollen in the middle and inflated. *Leaves* sheath margin with pale brown hairs; auricles deflexed, 1–2 mm tall, bristle curled up to 10 mm long; ligule 1–1.5 mm tall, with bristles up to 10 mm long; blades 24–38 x 3.1–4.8 cm, margin serrate; abaxially densely pale brown hairy when young. *Pseudospikelets ca.* 2 mm long, glumes 2, 1.2–1.5 mm long, mucronate, lemma 2 mm long, acute, glabrous, palea 2 mm long, not keeled, acute, glabrous, young anthers 1 mm long, yellowish.

Distribution. Central Sulawesi, Morowali District, Petasia Subdistrict, Bungin Timbe Village, about 2–5 km north of Kolonodale.

Ecology. Secondary forest, lowland.

Notes. This species is very similar to *D. barbata* due to its deflexed auricles with many bristles, however, it differs by its outward culm sheath auricle at both edges, entire ligules and erect blades. It differs from *D. albociliata* Widjaja by its glabrous culm sheath base, sheaths without appressed white to pale brown hairs. Only known from the type.

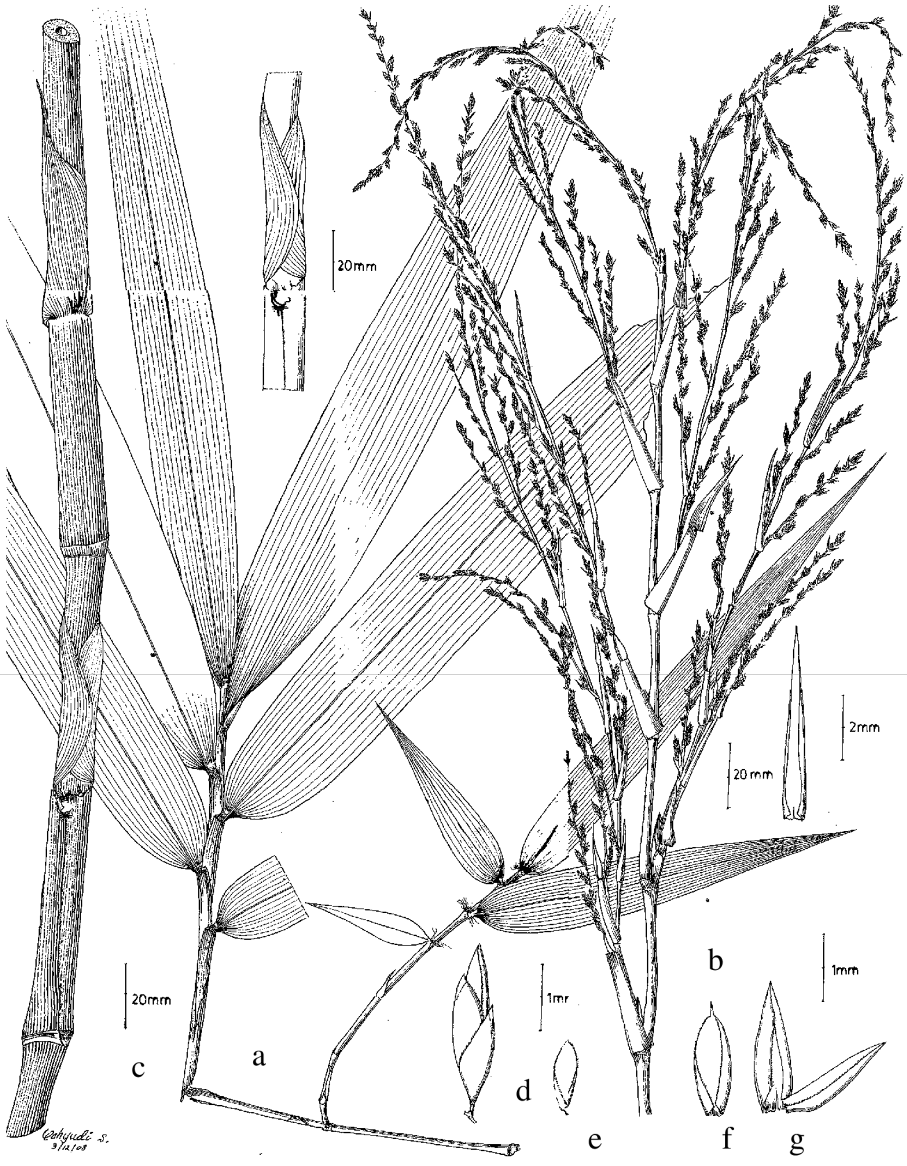

Fig.2. *Dinochloa morowaliensis* Widjaja. (a. Leaves, b. Inflorescence, c. Culm sheath, d. Pseudospikelet, e. Glume, f. Glume 2, g. Lemma and Palea. Drawn from *EAW 7643*).

Dinochloa petasiensis Widjaja, *spec. nov.* — Fig. 3.

Dinochloa erecta surculis viridibus alboceraceis, culmi vagina basali pilis dispersis dilute brunneis ad albis usque ad vaginae circatricem, culmi vaginae auriculis deflexis raro setis 1 vel 2 *c.* 4 mm longis ad extremum unum, foliorum vaginis pilis dilute brunneis juventute glabrescentibus aetate, auriculis parum ad distincte plicatis setis multis longis, ligulis setis multis longis differt. A *D. albociliata* quoque culmi vaginae basi glabra vel pilis dispersis, vagina sine pilis appressis albis ad dilute brunneis differt. — Type: Central Sulawesi, Morowali District, Petasia Subdistrict, Bungin Timbe Village, about 2–5 km north of Kolonodale, *Elizabeth A. Widjaja EAW 7641* (Holotype: BO, Isotype: L, K)

Young culms green and white waxy, 2 cm diam., internodes 20–30 cm long. *Culm sheaths* caducous, glabrous, sheath overlapping, the hiding basal sheath with scattered pale brown to white hairs till the scar sheath apex; sheath 7.0–8.5 cm long, margin with pale brown hairs especially when young; auricles *ca.* 1 mm tall, slightly

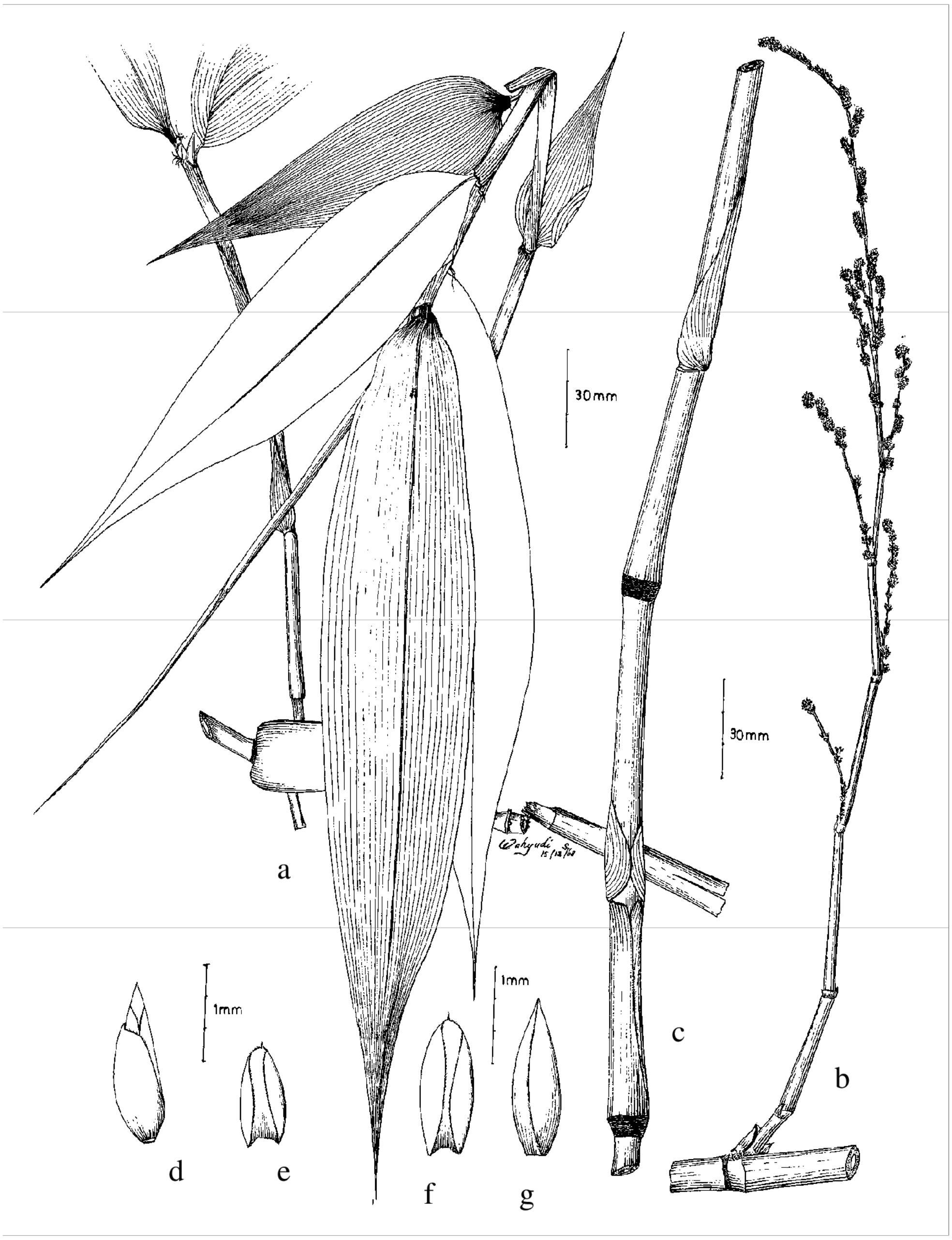

Fig. 3. *Dinochloa petasiensis* Widjaja. (a. Leaf, b. Inflorescence, c. Culm sheath, d. Pseudospikelet, e. Glume, f. Lemma, G. Palea. Drawn from *EAW 7641*).

deflexed along the sheath apex till the blade base, glabrous or rarely with 1 or 2 bristles 4 mm long at one end; ligule 1 mm tall, entire or irregular serrate with minute hairs to glabrous; blades erect, broadly ovate, overlapping, 4.0–7.5 x 0.5–1.2 cm wide at the base, base cordate, apex acuminate with long tapering tip, slightly swollen in the middle and inflated. *Leave* sheaths with pale brown hairs when young becoming glabrous when older; auricles prominent, slightly deflexed to deflexed, bristles many, curled up to 17 mm long; ligules 1–2 mm tall, with many long bristles up to 14 mm long; blades 23.2–39 x 3.2–5.3 cm, glabrous on both sides. *Flowering branch* about 1 m long, pseudospikelets 3 mm long, glumes less than 1–1.5 mm long, mucronate, lemma 2 mm long, acute, glabrous, palea 2 mm long, not keeled, acute, glabrous to slightly pilose, anthers 1.5 mm long, yellowish, styles 2.5 mm long.

Distribution. Central Sulawesi, Morowali District, Petasia Subdistrict, Bungin Timbe Village, about 2–5 km north of Kolonodale.

Ecology. Secondary forest, *ca*. 50 m asl.

Notes. This species differs from *D. erecta* Widjaja by its green and white waxy shoots, basal culm sheath with scattered pale brown to white hairs till the scar sheath, culm sheath auricle slightly deflexed rarely with 1 or 2 bristles, bristle *ca*. 4 mm long at one end, leaves sheath with pale brown hairs when young becoming glabrous when older; auricle slightly folded to folded with many bristle and long; leaves ligule with many long bristle. It also differs from *D. albociliata* by its culm sheath base being glabrous or with scattered hairs, sheath without appressed white to pale brown hairs. Only known from the type.

KEY TO THE SULAWESI SPECIES OF *DINOCHLOA* WITH ERECT CULM SHEATH BLADES

1. a. Culm sheath auricles present……………………… 2
   b. Culm sheath auricles absent……..…………….9
2. a. Culm sheath auricles spreading to deflexed….. 3
   b. Culm sheath auricles erect………...………… 6
3. a. Culm sheath auricles spreading………………… ………………………….. *D. aopaensis* Widjaja
   b. Culm sheath auricles slightly deflexed to deflexed ………………………………………4
4. a. Culm sheath base with scattered hairs. Auricles slightly deflexed when mature………………….. …………………………..*D. petasiensis* Widjaja
   b. Culm sheath base glabrous. Auricles deflexed…. ……………………………………………5
5. a. Culm sheath auricles outcurved, bristly………. ……………………....*D. morowaliensis* Widjaja
   b. Culm sheath auricles not outcurved, glabrous…. ……………………………….*D. erecta* Widjaja
6. a. Culm sheath base more or less hairy…...……..7
   b. Culm sheath base glabrous……………………8
7. a. Sheath of the culm sheath hairy, culm sheath base densely hairy with golden hairs, leaf sheath auricles deflexed………..*D. albociliata* Widjaja
   b. Sheath of the culm sheath glabrous, culm sheath base hairy with light brown hairs, leaf sheath auricles erect… *D. acutiflora* (Munro) S. Dransf.
8. a. Culm sheath margin hairy, auricles large, more than 5 mm tall, ligule with long bristles, blade inflated………… *D. darvelana* S. Dransf.
   b. Culm sheath margin glabrous, auricles small, less than 2 mm tall, ligule glabrous, blade not inflated. ..………………..*D. cordata* S. Dransf.
9. a. Leaf sheath auricles small, with long bristles.…..*D. palawanensis* (Gamble) S. Dransf.
   b. Leaf sheath auricles absent to inconspicuous, glabrous……………………………………… 10
10. a. Leaf margin with short appressed hairs, auricles absent……..….. *D. scabrida* S. Dransf.
    b. Leaf margin glabrous, auricles inconspicuous.....………………….…*D. truncata* Widjaja

ACKNOWLEDGEMENTS

Firstly I would like to thank to the Masarang Foundation Tomohon for providing a grant that gave me the opportunity to explore G. Tiga Cabang, Rawa Aopa National Park during an expedition together with Mr. Theogives Lasut when he collected grasses of Sulawesi for his doctorate thesis. I sincerely thanks to Mr. Hamzah who accompanied me in the field. I would like also to thank Mr. Wahyudi Santoso and Mrs. Anne Kusumawaty who made the illustrations of these new species. Lastly, I would like also to thank Dr. Mien A. Rifai (BO), Dr. J. F. Veldkamp (L), and Dr. S. Dransfield (K) for their criticism in reviewing this paper, also to Dr. J.F. Veldkamp (L) for providing the Latin diagnoses.

REFERENCES

DRANSFIELD, S. 1981. The genus *Dinochloa* (*Gramineae-Bambusoideae*) in Sabah. *Kew Bull.* 36(3): 613–633.

DRANSFIELD, S. 1989. A new species of *Dinochloa* (*Gramineae-Bambusoideae*) from Borneo. *Kew Bull*. 44(3): 435–437.

DRANSFIELD, S. 1992. *Dinochloa robusta*, a new species of bamboo (*Gramineae-Bambusoideae*) from Sabah and Palawan. *Kew Bull*. 47(3):402.

DRANSFIELD, S. 1996. New species of *Dinochloa* (*Gramineae-Bambusoideae*) in Malesia and notes on the genus. *Kew Bull*. 51(1): 103–117.

DRANSFIELD, S. 1998. Notes on *Bambusa diffusa*

(Gramineae-Bambusoideae) from Luzon, Philippines. *Kew Bull*. 53(4):875–881.

DRANSFIELD, S. & WIDJAJA, E.A. 2000. *Dinochloa matmat*, a new bamboo species (*Poaceae-Bambusoideae*) from Java, Indonesia. *Kew Bull*. 55: 495–497.

ESCOBIN, R.P., PITARGUE JR., F.C., RAMOS, M.D.R., MARUZZO, M.M. & AMERICA, W.M. 2005. *Identification manual of Philippine climbing bamboos.* FPRDI, College, Laguna 4031, Philippines.

WIDJAJA, E.A. 1997. New taxa in Indonesian Bamboos. *Reinwardtia* 11(2): 57–152.

WIDJAJA, E.A. 2004. New species of bamboos (*Poaceae-Bambusoideae*) from Bali. *Reinwardtia* 12(2):199–204.